JANUARY 1969
Vol. 34, No. 6

soil conservation

DEVOTED TO THE WISE USE OF LAND AND WATER RESOURCES

CONSERVATION IN CITIES AND TOWNS

A sampling of citizen action

SOIL CONSERVATION SERVICE

U. S. DEPARTMENT OF AGRICULTURE

January 1969 Vol. 34, No. 6

soil conservation

DEVOTED TO THE WISE USE OF LAND AND WATER RESOURCES

COVER: A conservation pond in a suburban development in the Ontario Soil and Water Conservation District, N. Y., beautifies the environs of an office building and factory near Canandaigua.

In town . . .

Care of the land is a proper concern of people in cities and towns.

Recent issues of *Soil Conservation* (e.g., September 1968) have focused on soil and water problems of urban and suburban areas.

This issue spotlights examples of conservation action by people who live "in town."

Our invitation to SCS fieldmen to tell of conservation service rendered to urban residents brought examples ranging from small country towns to major metropolitan areas.

Metropolitan: Many major industries in the northeastern megalopolis are giving care to their often extensive grounds (p. 129) as solicitous as that of any rural resident.

Likewise, the city of Atlanta finds it desirable to treat soil and water problems on its modern airport according to a conservation plan (p. 123).

Montgomery County on the edge of Philadelphia uses soil surveys and SCS technical aid in much the same way as more rural areas in soil conservation districts (132).

And California has provided legal means for rapidly urbanizing areas to restrain the disappearance of open space (p. 127).

And rural: In the small cities and towns that still characterize most of America, citizens often act together for mutual conservation benefits.

Witness the citizens' council in Idaho Falls, Idaho, (p. 139) and Junior Chambers of Commerce in Fairgrove, Mich. (p. 128) and Hoxie, Kans. (p. 144).

123 Jet-age airport applies soil and water conservation
By G. Robert Peeples

125 Setting the suburban scene with ponds
By Robert L. Caldwell

127 California's Land Conservation Act
By John H. Miner

129 Communities share industrial investments in conservation
By Samuel R. Race

131 Water for a thirsty town pumps new life into economy

132 An alliance for suburban planning

134 Keeping Jack Frost off the cranberries
By Henry J. Ritzer

136 Fire prevention: a new job for plants
By Theodore E. Adams, Jr.

137 Grass, water, management make paying pasture

138 Go-to-grass farming puts weight on cattle
By Walter N. Parmeter

141 Meetings
National Council of Farmer Cooperatives

141 Review
River Control and Drainage in New Zealand; Wastes in Relation to Agriculture and Forestry; Soil-Plant Relationships; New publications; Soil surveys

143 From the Administrator
Conservation concepts for the future

144 A neglected park becomes a recreation center

Around the country
126 Suburban Sam, Ohio; 128 Village park, Michigan; 130 Conservation laboratory, Ohio; 135 Range conservation, Florida; 139 Citizens' council, Idaho; 140 Soil surveys, Illinois; 140, Pond, Colorado

SOIL CONSERVATION is the official magazine of the Soil Conservation Service, published monthly by direction of the Secretary of Agriculture as administrative information required for proper transaction of the public business. Use of funds for printing this publication approved by the Director of the Bureau of the Budget July 17, 1968.

ORVILLE L. FREEMAN, Secretary of Agriculture
JOHN A. BAKER, Assistant Secretary of Agriculture
DONALD A. WILLIAMS, Administrator, Soil Conservation Service
BEN O. OSBORN, Editor
GEORGIE A. KELLER, Production Editor

Prepared in the Division of Information, Soil Conservation Service, U. S. Department of Agriculture, Washington, D. C. 20250

Reprint permission: Contents of this magazine may be reprinted without special permission. Credit is not required but is appreciated. Photos available on request.
Commercial names: Mention of commercial enterprises or brand names does not constitute endorsement or imply preference by the Department of Agriculture.

Subscription: $2.50 per year, $3.25 foreign. Single copy 20 cents. Discount of 25 percent on orders of 100 or more sent to same address. Order direct from Superintendent of Documents, Government Printing Office, Washington, D. C. 20402.

All wrapped up in vegetation and concrete . . .

Jet-age airport applies soil and water conservation for safety and economy

A soil conservation and water-disposal plan now in effect on Atlanta's modern jet airport has brought greater safety to air travelers landing at the Georgia capital and great savings in maintenance costs to Atlanta taxpayers.

The plan was worked out in 1966 under a cooperative working arrangement signed by Mayor Ivan Allen, Jr., with the supervisors of the Upper Ocmulgee River Soil and Water Conservation District. The Soil Conservation Service provided soil surveys and technical assistance to the airport management the same as it does to other landowners cooperating with the district.

By G. Robert Peeples
Area conservationist, SCS, Decatur, Ga.

The airport's erosion problems were compounded when it became necessary to increase the length of runways to meet the needs of jet-powered aircraft.

Located in an area of rolling hills and valleys, the original runways were constructed without great difficulty on the more level areas. But to accommodate today's high-speed jetcraft, it was necessary to cut through hilltops and fill valleys. This created critical erosion problems on the resulting steep cut and fill slopes and borrow areas.

In addition, buildings and pavement on more than a third of the 2,000-acre airport greatly increased runoff water that soon carved a continuous pattern of gullies. Some gullies became large enough to hide entire airplanes had they wandered off the runways.

According to J. H. Kimbrel, airport maintenance superintendent, four trucks and a tractor with a front-end loader were kept busy about 10 days after each heavy rain hauling dirt to fill washouts. This occurred about five or six times each year.

The Atlanta City Prison farm had been given permission to use some of the undisturbed areas for crop production and to grow hay on the borrow areas. When Aubrey Thomaston, first assistant administrator of the prison, who had practiced conservation on livestock farms, saw the erosion occurring on the farmed areas, he suggested to Airport Manager Grady Ridgeway that a conservation plan be developed for the entire airport.

The SCS conservationists found about 57 acres of cut and fill slopes, 500 acres in the safety zone, fuel storage, and related areas, 316 acres in borrow areas, and 300 acres in undisturbed areas that needed protection. There were 835 acres in paved areas and buildings that materially increased runoff.

Each area was considered separately to determine needed treatment. Various types of vegetation especially suited to controlling severe erosion were selected for the

At right is a gullied borrow area between a cut slope on the left and fill on right that was a hazard to costly airport installations before treatment. Excellent cover of sericia lespedeza on side slope along runway pleases J. H. Kimbrel, airport maintenance superintendent (left), and Aubrey Thomaston, Atlanta Prison Farm official.

land areas. Masonry drop inlets were planned to get the surplus water off the flatter areas into the natural drainageways.

Establishing the needed practices posed difficulties because ordinary equipment was not suitable for seeding the steep slopes along the runways. Hydraulic seeding equipment was obtained to apply seed, fertilizer, and mulch to these areas.

Now, almost 2 years later, most of the area is covered with lush permanent vegetation. This, along with drainage outlets, has just about solved the complicated water-disposal problems at the airport.

Maintenance Superintendent Kimbrel, who lives near a waterfall on a stream below the airport, rests easier now. "Before we started this work," he said, "I'd sit on the porch at night after heavy rains and listen to the water carrying truckloads of soil from the airport. I dreaded the thought of having to spend days hauling other dirt back to replace it. Now I don't have to worry about that anymore."

Assistant Airport Manager Ken Malone noted, "The hydraulic seeder has more than paid for itself. Not only have we used it to seed the steep areas, but its 1,500-gallon tank and high pressure pump make it useful as auxiliary fire fighting equipment and to clean runways." ♦

Conservation spots included in TV news

A visit to the local television station news department by SCS area and district conservationists resulted in the filming and showing of conservation happenings on the regular news programs of Station KTBS—Channel 3 TV in Shreveport, La.

TV people and conservationists agree that the short "spots" are going over big with the station's some 70,000 viewers.

The idea was put into action when Area Conservationist Chester Bellard and District Conservationist Clint Harris visited News Director Orland Dodson last July. Dodson liked the idea and suggested that they start right away. A schedule for filming 12 programs was prepared by the conservationists.

The first film was made a week later. District Conservationist Harris had scheduled a team of SCS technicians to make soil borings and to survey an area on a district cooperator's farm that was being developed for ducks.

The station cameraman picked up Harris on his way to the site. About 5 minutes of color film was shot with the conservationists in action. Harris had already prepared a script to accompany the film. The film was shown during the early evening news hour and again on the late evening news program that day.

Two weeks later the TV cameraman traveled more than 40 miles into Desoto Parish to film a 5-minute spot on the production of feeder calves on a conservation farm. Scenes of improved pastures, cattle, and calves on their way to market were filmed and used on the news program that day. The conservationist prepared information for the newscaster to use when the film was shown.

The third trip to the field was in mid-October. It dealt with cotton harvesting on conservation-treated land as compared to nontreated land.

Other scheduled items include fish deliveries for pond stocking, an RC&D project organization meeting, tree planting, soil surveys, and hunting on an area where wildlife food plantings have been made.

News Director Dodson says that he believes these spots add to the viewer appeal of the news program. "More outdoor scenes are needed to add variety to our programs," he said. "We are very pleased with the quality of the conservation spots and are looking forward to filming more in the future." ♦

Setting the suburban scene with ponds

Conservation ponds, large and small, add beauty and value to the New York landscape

By Robert L. Caldwell
Agricultural economist, SCS, Syracuse, N.Y.

Not many of us have the good fortune to live in the "new town" atmosphere of a Reston, Va., or a Columbia, Md., where beauty is implicit in the planning process and is expressed in architectural and landscaping excellence.

But, fortunately, the techniques for adding beauty and value to the landscape are available to most landowners. One of these is the conservation pond, a measure used with satisfying results by many residents of rapidly urbanizing areas of New York State.

On the larger lots near growing metropolitan areas, one of the first things many new landowners do is contact the local soil and water conservation district about installing a pond.

A pond of ⅓- to ½-acre surface area generally fits perfectly into the desire for recreation, nature appreciation, and a scenic and pleasurable vista. But the average size of ponds in New York is increasing, and many of 1, 2, and 5 acres or larger have been constructed with SCS assistance. These larger ponds have served as the nucleus for all kinds of development, and both sizes create values out of proportion to their costs.

In the township of Elma, an outlying suburb of Buffalo, the Erie County Soil and Water Conservation District assisted a landowner in constructing a 3-acre pond. The pond and its surrounding 5 acres of parkland served as the focal point for a 70-lot residential subdivision.

At present about 40 families hold membership in the Winch Lake Association and through an annual membership fee and contributed labor have developed a beach, floats, a diving board, a community shelter, and lighting for night swimming and ice skating.

Local residents estimate that the $2,200 lake has increased the value of their properties by $300 to $500 each. The total enhancement of $16,000 makes such a planning effort well worth the time.

Such income enhancement does not always accrue only to the land speculator and developer. In the Green County Soil and Water Conservation District, Maurice Beers, a cooperator who had been a dairy farmer, used SCS assistance to start a recreation enterprise. Mr. Beers built a 4-acre pond on a 50-acre tract valued at $5,000. The pond cost $10,000, making a total investment of $15,000. Immediately after the pond filled, he was offered

$50,000 for the land and pond—more than three times his investment!

These large enterprises are outstanding examples of the economic effects of conservation ponds, but what of the approximately 13,000 smaller ponds SCS has provided assistance for in New York State?

Donald Ogden of the Ogden Real Estate Agency in Walton estimates that construction of conservation ponds has increased the value of local properties by $150 per acre. His company checked sales records for rural properties it had sold several times in recent years and found that after a pond was installed the selling price of the property commonly increased from $50 to $200 per acre. Ogden attributes the entire increase to the presence of the pond. Allowing for normal appreciation of land prices and for the average size of properties, this amounts to an increase in land value of about $5,000 per pond.

Application of such figures on a statewide basis is risky, but they indicate the magnitude of this aspect of the conservation program in New York. If only the ponds built by nonfarm landowners in New York are considered, then 4,400 ponds costing an estimated $3 million have generated a real estate base of $22 million.

This base is taxable at the average statewide rate of $30 per $1,000 of market value and could generate a real estate tax revenue of nearly two-thirds of a million dollars annually.

Facts such as these indicate that when we talk about conservation ponds and money, perhaps we can have our cake and eat it too! ♦

Unprotected sand dunes destroy

Sand dunes move actively and relentlessly—when their vegetative cover is destroyed. They can spell trouble to highways and railroads, fill harbors or navigable streams, push into homes and communities, and encroach on farmlands and forests. ♦

Suburban Sam quizzes soils expert on radio

Suburban Sam is not a person—he's a radio program.

On the airwaves, Suburban Sam represents the suburbanite who calls the Soil Conservation Service office when he has a soil, water, woods, or wildlife question about the land he owns.

Suburban Sam was created 4 years ago by Duane Bosworth and Fred Merrill, then SCS work unit conservationists at Strongsville and Canfield near Cleveland, Ohio.

The conservationists had found that in serving their work areas with large urban and suburban populations, they spent much time on the phone repeatedly answering the same or similar questions. Bosworth and Merrill reasoned that more suburbanites could be reached by radio than by telephone. Thus, Suburban Sam was created to fill a definite need to make SCS work more efficient.

The Suburban Sam 4½-minute program is broadcast weekly over station WJW in Cleveland. Each week Sam, portrayed by Fred Merrill, has a problem on the small acreage he owns in the suburbs. He asks his soil conservationist, portrayed by Bosworth, how to solve the problem. Bosworth gives him the answers.

Because Merrill and Bosworth record their Suburban Sam radio program without benefit of a script, the public's reaction to their spontaneity is enthusiastic. Suburban Sam is a colloquial, stubborn character, often confused but earnestly seeking the right answers.

Radio station program directors endorse this Suburban Sam method of presentation because conversation holds listeners. One person speaking for the same time span is apt to bore today's listener who is quick to spin the dial to something of interest.

Fred Merrill (left) and Duane Bosworth run through program notes before a Socony-Mobil Research Laboratory, ex-Cleveland Station WJW's sound truck.

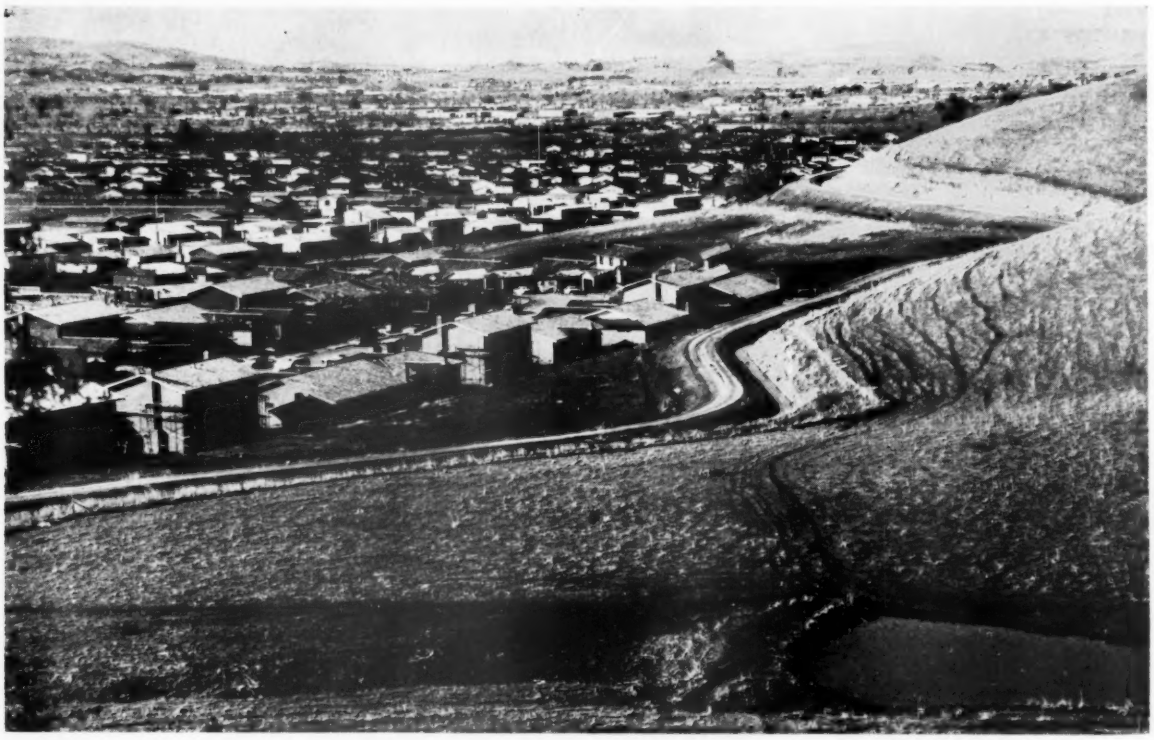
Sam's land and water problems that have been "solved" on the program include such things as how to seed and hold an eroding slope, how to divert water away from his yard, how to build a pond for fishing and wildlife, and why tight soils keep his septic tank and leach field from working properly.

Sam (Merrill) and Bosworth have also discussed soil conservation districts, urban land planning, watersheds, and even traffic accidents resulting from mud on the highway that had washed off a bare soil area in the process of development.

Originally Suburban Sam was heard only in Cleveland and Youngstown. In recent years six other radio stations in Ohio have begun airing the program.

Bosworth has gone on to another job as a public information specialist at Portland, Oreg., but Merrill as Suburban Sam continues to put his questions to the new conservationist, Robert W. Smith of Bucyrus, Ohio. ♦

California's Land Conservation Act



Former orchardland of capability class I and II below the Contra Costa Canal is now covered with houses. The stockpond stands as a witness to an agricultural history.

By John H. Miner
State soil conservationist, SCS, Berkeley, Calif.

Each day California gets 1,600 new people and puts 385 acres under pavement or buildings. At such a rate does California's expanding cities encroach on the state's prime agricultural land.

To conserve agriculture and open space, land planners and decision makers have tried zoning, development easements, and other land-use controls enacted at the local level. But these efforts generally failed to preserve productive lands, natural beauty, and open space.

In 1965 the California legislature enacted the Land Conservation Act, sponsored by John Williamson, assemblyman from the agriculturally important Kern County, and the members of the Assembly Agriculture Committee.

Land Conservation Act

The act provides a basis for voluntary action by the landowner and Government with assurances that designated land will be treated and taxed as farmland.

The act recognized two major agricultural land types: prime and nonprime land. Prime land is Class I or II in the Soil Conservation Service land-capability classification, or land that has produced in 3 of the preceding 5 years unprocessed agricultural crops worth $200 gross per acre before processing. Nonprime land is land that does not qualify as prime land.

For lands to qualify under the act, they must be in an agricultural preserve. These are areas devoted to agricultural or compatible uses, such as recreation. The local government, usually the county, establishes the preserves which may contain both prime and nonprime land and can be any size in excess of 100 acres.

When the preserve is designated, the local government is ready to enter into contracts with owners of prime land or into agreements with owners of prime or nonprime land.

Contracts on prime land

The contract limits the use of prime agricultural land to agricultural uses for a definite period of years, with a minimum of 10 years. Unless a special request is made by the landowner or the local government, the contract is automatically renewed each year. A contract can be canceled by the mutual agreement of the landowner and the local government with approval by the state director of agriculture, if the cancellation is judged to be in the public interest.

The contracts are transferable to subsequent property owners and do not restrict the sale of the land, but the land continues to be subject to the contract provision of agricultural use.

The act recognizes agriculture as the best use of this type of land and provides for favorable tax treatment. If the assessed valuation increases during the contract period, the landowner is compensated by the county $5 for each $100 increase. Since the county's share of the tax on $100 increase in valuation is usually considerably less than $5, the effect is to freeze the valuation on contract land.

Nonrenewal, as opposed to cancellation, can be carried out by either contracting party. If not renewed, the existing contract remains in effect for 9 more years, then 8, and so on. As a nonrenewed contract approaches the end of its term, the assessed valuation may increase, and as a result, the county will receive a greater return than it will be called on to pay out.

The State of California assists local governments with the administrative costs of the contracts at the rate of $1 an acre per year. To be eligible for this payment, the local government provides the California director of agriculture with maps and descriptions of land within the agricultural preserve and tracts under contract.

Agreements on nonprime land are entered into voluntarily by the landowner and the local government. The land must be in an agricultural preserve to be eligible for an agreement. There is no compensation under this arrangement and the term of the agreement is determined by the landowner and local government.

By the terms and firmness of the agreement, the assessor can determine the valuation for tax purposes, which will generally be based on agriculture or a compatible use. This more favorable tax climate for the landowner is the primary benefit derived from the agreement.

As of November 1, 1968, 24 of California's 58 counties had established agricultural preserves in compliance with the act. There were 2,084 acres under seven contracts and about 2 million acres under approximately 1,700 agreements.

State constitution amended

California's effort to protect open space was further strengthened in 1966 by an amendment to the state constitution to provide for tax assessment practices "to maintain, preserve, conserve, and continue in existence open space lands for food and fiber production, recreation, and beauty."

The California Land Conservation Act and the Open Space Conservation Amendment are beginning to be effectively applied as a means of maintaining the desired balance between conflicting needs for land. ♦

Jaycees start project for a village park

In 1966 when the Fairgrove Junior Chamber of Commerce was organized, their first project was to make a survey to find out what the local people really wanted most. The answer was, "We want a park of our own."

Residents of Fairgrove community, Tuscola County, Mich., in the heart of one of the state's most productive agricultural areas, had no nearby place for an outdoor group gathering or even a family picnic.

So the Fairgrove Development Corporation was organized, and citizens used their own money to purchase a tract of land on the edge of the village. From this, the Fairgrove Village Council, guided by the choice of the Jaycees, bought 5 acres of wooded area with a stream winding through it. The Jaycees agreed to develop the park if the council would maintain it.

The village became a cooperator with the Tuscola Soil Conservation District and obtained planning and technical assistance available from the Soil Conservation Service.

SCS conservationists provided soil information and ran a survey to help determine the best layout for removal of excess water and to develop a conservation plan to utilize the full potential of the area.

In the meantime the Jaycees had been busy building picnic tables and swings. Now they went to work in earnest clearing trees and brush, reshaping the steeper slopes, and seeding the newly disturbed areas.

But progress is just beginning. The village is applying for a grant from the Land and Water Conservation Fund with the assistance of the Tuscola County Planning Commission.—L. WILBUR KELLOGG, *district conservationist, SCS, Caro, Mich.* ♦

Dr. George Kerr, a chemist at the Socony-Mobil Research Laboratory, turns angler at lunch time beside the lab's 1/3-acre pond.

New Jersey communities share the benefits of industrial investments in conservation

By Samuel R. Race
Executive secretary, State Soil Conservation Committee, Trenton, N. J.

The New Jersey State Soil Conservation Committee has noted a welcome trend among big-name companies that own large amounts of local real estate. Indications are that industry is joining the movement to protect streams, vegetation, wildlife, and similar community resources for which agriculture has maintained traditional responsibility.

Although commercial interests sometimes have a reputation for consuming these resources, today some of them are among the strongest backers of soil conservation districts, watershed projects, and open space programs.

The Soil Conservation Service provides soil information and technical planning assistance to large industrial concerns that become cooperators with conservation districts in the same way it does to small individual property owners and farmers.

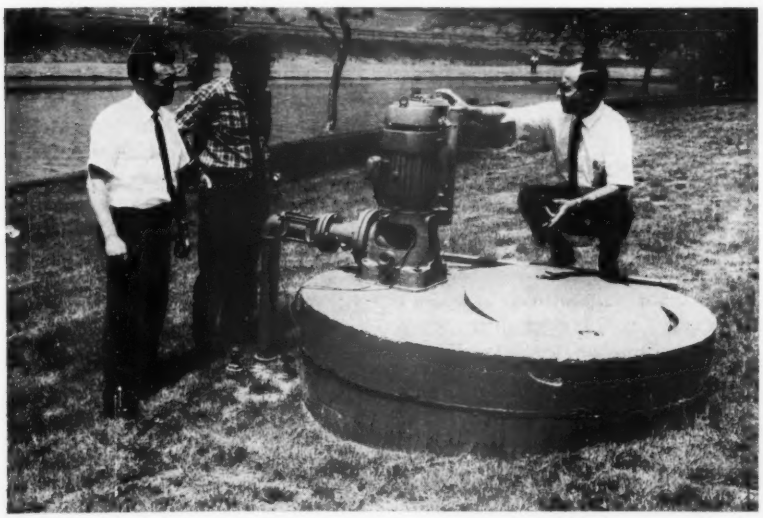
Industrial landowners have given vital support to a $7 million watershed project launched on the Assunpink Creek which flows through the heart of Trenton. Flood relief, recreation, and water supplies will be provided with technical and cost-sharing help from the Soil Conservation Service.

Local approval is required to construct an elaborate system of dams, channel work, parks, and land treatment. Among the approving firms are Thickol Chemical, Goodall Rubber, DeLaval Steam Turbine, Youngs Rubber, Crescent Wire, Pennsylvania Railroad, Stokes Molded Products, and Athert Machinery.

State soil conservation representatives recently sampled industrial land-management progress in Mercer and Somerset-Union soil conservation districts and found that conservation planning is a must with many of the research-oriented firms of the area.

For example, American Cyanamid has spent $75,000 on an 8-year model land-protective plan for 640 acres surrounding the company's agricultural research laboratories at Clarksville. It includes several miles of erosion-preventing terraces, extensive wildlife plantations, and a newly built pond supplying millions of gallons of water for irrigation, livestock, and poultry.

Harold Hartwick, Cyanamid's farm manager, says their conservation plan has proved to be both economic and flexible. "We often



William Campbell, manager of the Socony-Mobil Research Laboratory, explains a multipurpose cistern and pumping unit to Vincent Lafferty (left), foreman, and Harry Slayback, district conservationist, SCS.

Robert Avery, superintendent of grounds for the Educational Testing Service, Princeton (standing), shows wildlife food plantings to Harry Slayback, district conservationist, SCS.

have to adjust quickly to the sharp twists in research objectives," he said.

Mobil Oil Company makes unique use of a manmade pond on its 315-acre Central Research Division Laboratory in Hopewell Township. Treated water from the labs is stored for study before being released into the Stoney Brook watershed.

The response of bass and bluegills in the pond to the rods of lab employees during leisure moments also helps indicate whether there is pollution in the water leaving the plant.

William A. Campbell, Mobil's administrative supervisor at Hopewell, says the pond also is a stopover for wild ducks and geese on their migratory flights.

Similar programs are operated by Merck Institute at North Branch and CIBA (Chemical Industry of Basle, Switzerland), at Three Bridges.

Both firms have invested in soil and water saving practices to protect research work in pharmaceuticals. Curbing of pollution in the Raritan River watershed is one example of benefits to surrounding communities.

Dr. Douglas C. Maplesden, director of CIBA's research station, has established a conservation system of grassland and water controls on 360 acres. In the 6 years since the company purchased and combined four adjacent farms, almost 4 miles of water-diverting terraces have been built. Trees have been planted on 12 acres.

CIBA recently built two ponds—one for irrigation, recreation, and fish management and a second to check contamination in sewage from experimental animals. A third pond is planned for water storage, irrigation, and additional recreation uses.

Dr. Walter Cobb, director of Merck's research operations, has divided 215 acres into small grazing plots to help develop feed additives that preserve health and production in farm animals. In use for more than a decade, this program has won a national award endorsed by the Somerset-Union Conservation District.

Terraces protect all fields and add beauty to the local scenery.

At Educational Testing Service near Princeton a large pond is stocked with fish and offers haven to a flock of Canada geese. On 200 wooded acres of the 400-acre grounds, Robert P. Avery, superintendent of land and buildings, pursues a program of forest improvement and protection. Grassland makes a handsome setting for office buildings used by the 750 regular employees.

ETS's wildlife conservation plan features large areas of food and cover plantings, such as hedges of honeysuckle, rose, and lespedeza. As many as 72 deer have been counted on the property. These, plus a large songbird population and numerous other forms of resident wildlife, attest to the program's success.

In keeping with their educational aims, ETS makes its grounds available to nature classes and outdoor hobbyists, such as Boy and Girl Scout campers.

Superintendent Avery said, "Basically our aim is to keep the grounds natural looking and inviting to a public that enjoys open greenery. I should think any type of landowner would want to do as much."

The conservation committee's survey indicates there are increasing numbers of corporate landowners in New Jersey who share this belief. ♦

Boy Scouts use Ohio farm as conservation laboratory

An Ohio farm that once produced alfalfa hay and beef cows now provides a practical education in conservation for about 1,000 Boy Scouts from the Fort Steuben Area Boy Scout Council who use the farm for recreation and camping.

Council leaders signed up as a cooperator with the Harrison Soil and Water Conservation District after the council bought the farm about 10 years ago.

With SCS help they developed a conservation plan to protect the soil from erosion, provide camping and recreation sites, and developed the area for wildlife and woodland. Now, the entire farm is protected from livestock, and open fields are being planted to pine trees. The camping and recreation areas will be maintained in grass cover.

These practices provide watershed protection for Clendening Lake, one of the lakes in the Muskingum Watershed Conservancy District.

The farm offers urban youngsters, who have never had the opportunity to plant trees and grass, a chance to practice conservation where the beef farmer left off.—EARL C. NELSON, *district conservationist, SCS, Cadiz, Ohio.* ♦

Water for a thirsty town pumps new life into economy of a watershed community

Upwards of 100 new homes have been built in the Lincoln area since the town's water supply went into operation.

Add abundant pure water to a thirsty town and you will get instant economic growth and opportunity, according to business and civic leaders of Lincoln, Ark.

Water-short Lincoln turned the valve on a new water source from a Public Law 566 multiple-purpose lake in January of 1964.

"The town started growing immediately," Mayor Roy Jackson asserts, "and with 2 million gallons of good water a day from the new source, it kept on growing."

The Lincoln water system was fed until recent years by a spring which produced about 100,000 gallons a day. This gave the little town's water subscribers an average of about 200 gallons daily—inadequate in view of the service stations, restaurants, and other businesses that required several thousand gallons a day each.

In 1960 the Washington County Soil and Water Conservation District and other sponsors were working on a watershed protection and flood-prevention project for the Muddy Fork of the Illinois Creek watershed, in which Lincoln is located. The plan, authorized in 1961, contained provisions for a multiple-purpose water supply and flood-detention lake, with Lincoln paying for the easements and extra cost of construction over and above that needed for flood detention.

For 2 years, water users had to eke by on what they could get. During the dry summer of 1962, volunteer firemen lived in constant fear of an outbreak and Water Manager Jack Cox had to resort to tank trucks to keep Lincoln alive.

Rains started filling the new lake before New Year's Day of 1964, and water at last filled the thirsty pipes of the Lincoln water system.

C. C. Karnes was contracting officer for the sponsors during the construction of the lake, and as an officer in the Bank of Lincoln has kept his hand on the strengthening pulse of the town's economic growth.

"The changes are visible to the naked eye," Karnes says, "because we do not have a lot of empty stores and buildings staring at us now. We have had about 20 new or expanded businesses since we obtained our new water supply—not counting industries.

"Our bank assets have grown by more than $2 million since the new water went into our pipes—most of it in new deposits.

"Upwards of a million dollars worth of new homes—nearly 100 houses—have been built or are under construction. The expanding benefits of these new homes touch building supply houses, appliance dealers, grocery stores—in fact all of our businesses.

"The largest industry to be attracted is a new food processing plant. It will employ 225 people at first, and eventually 450.

"This one industry will use eight times as much water in its operations each day as the town's total supply before the watershed project," Karnes said.

Probably one of the best indicators of Lincoln's growth since 1963 is the Lincoln School District tax assessment. In 1963 it was $2,405,634. Now it is $3,021,376. ◆

An alliance for suburban planning

Conservation district and planning commission find soil information the key

The soil conservation district and the planning commission in Montgomery County, Pa., form a natural alliance that is bringing order to development of housing projects, shopping centers, and industrial and office complexes spilling over the line from metropolitan Philadelphia.

Key to the improved planning is soil information provided by Soil Conservation Service professionals assigned to the Montgomery County Soil and Water Conservation District.

The conservationists help the Montgomery County Planning Commission interpret the resulting soil surveys into scientific guides for orderly community expansion.

To secure the mapping quickly, the commission endorsed contributing $30,000 in county funds to speed the work. As a result, the county survey was completed 10 years ahead of the original schedule.

The county has also contributed $35,000 to expedite planning of the Wissahickon Creek Watershed Project to reduce flood damages along the stream shared by adjoining Philadelphia County. Eventual construction of nine earthen dams along the Wissahickon will provide multipurpose benefits in flood prevention and recreation, fish and wildlife habitat, and increased water supplies.

An example of the new cooperation is a model flood-plain development ordinance completed by commission experts and recently submitted to the county's 62 communities.

"Here is another step in our drive to take the guesswork out of planning," Commission Director Arthur E. Loeben commented. "The ordinance is designed to keep homes and industries out of the pathway of flood damage and perennially wet basements. It is based on scientific interpretations of soil survey data now available to the county."

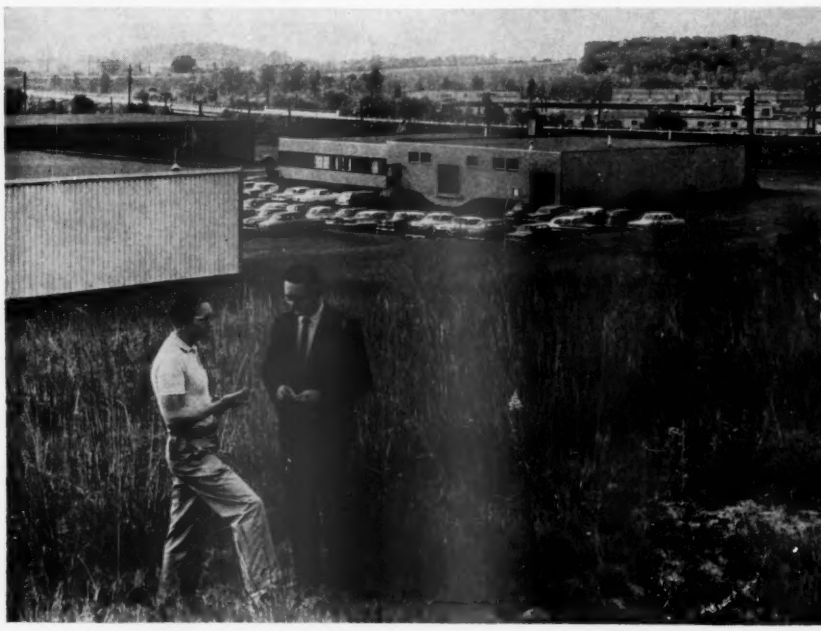
Already, 40 communities have used the interpretations prepared by William Plutte, principal planner, to translate soil information into specialized maps requested by the various townships and boroughs. The maps and supporting tables point out limits and potentials for building construction, roadways, onsite sewage disposal, water supplies, and similar community features.

Planned open space for recreation and a pleasing environment have become a top consideration for the planning commission in a county where population has increased 50 percent in a decade.

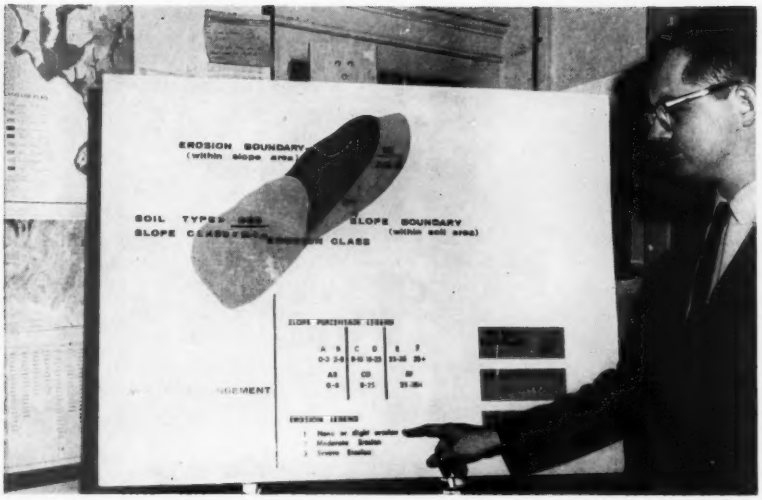
Planning Director Loeben feels that much of the remaining charm in the county's grassy valleys, wooded hills, and rolling farmland, little changed from colonial days, can still be maintained. The new conservation maps help pinpoint such areas.

Among these are 46 golf courses, comprising 9 square miles of attractive open space. Last year, the commission campaigned to save golf courses from the tidal wave of development by encouraging public purchase. Several townships acted immediately, found the idea

Industries and shopping centers along the Pennsylvania Turnpike take up much of the once-rural land in the Wissahickon Creek watershed. David Witwer (right), formerly of the Montgomery County Planning Commission, discusses significance of soil information with Robert V. Smith, SCS soil scientist who helped make the survey.



Jute matting is rolled into place to line a newly seeded grassed waterway to carry runoff from the Willow Grove Naval Air Station.

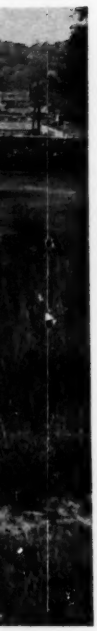


The planning commission uses many visual aids to explain soil facts and water management to citizen groups. David Witwer, cartographer, explains one interpreting the legend on soil surveys.

worked, and provided a fresh source of municipal income.

"Actually, district work and that of the planning commission complement each other in many ways," says Frank Ebert, chairman of the Montgomery District. "We support their countywide efforts by giving technical help to individual landowners, whether they're farmers, industrialists, recreation-operators, or just plain suburbanites. We are delighted with the opportunity to help with the problems of land undergoing change from rural to urban uses." ♦

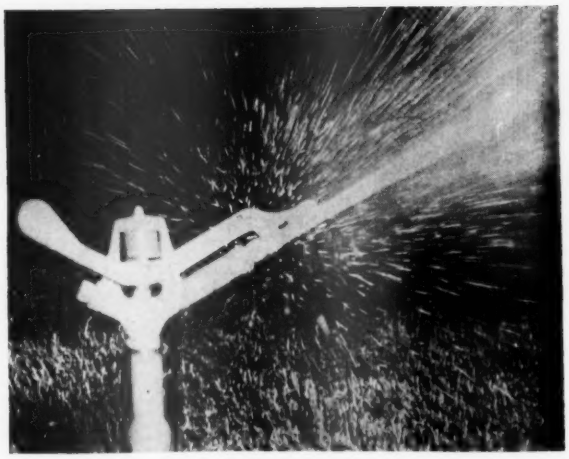
Soil left bare during the construction of new houses is subject to erosion and a source of sediment, a matter of concern to the planning commission.



SCS Soil Scientist Robert V. Smith examines the soil near runway on the Willow Grove Naval Air Station.

Sprinklers in the night . . .

Keeping Jack Frost off the cranberries



By Henry J. Ritzer
Soil conservationist, SCS, Middleboro, Mass.

Massachusetts cranberry growers are turning on new systems to foil Jack Frost, a destructive visitor in the bogs on chilly New England nights.

It's done with sprinklers, and water needs are cut as much as 90 percent from the old flooding method. It works something like this:

"A dangerous frost tonight with probable bog temperatures of 20°–25°" warns the Massachusetts Cranberry Experiment Station and the Weather Bureau in a joint forecast, and the hardy cranberry-men bundle up and prepare for an all-night vigil on their bogs. They keep constant watch on bog thermometers, and when the temperature drops to freezing the men take action.

Until recently, the usual frost protection method has been to completely flood the bogs with water. Water raises the temperature and thus protects the crop.

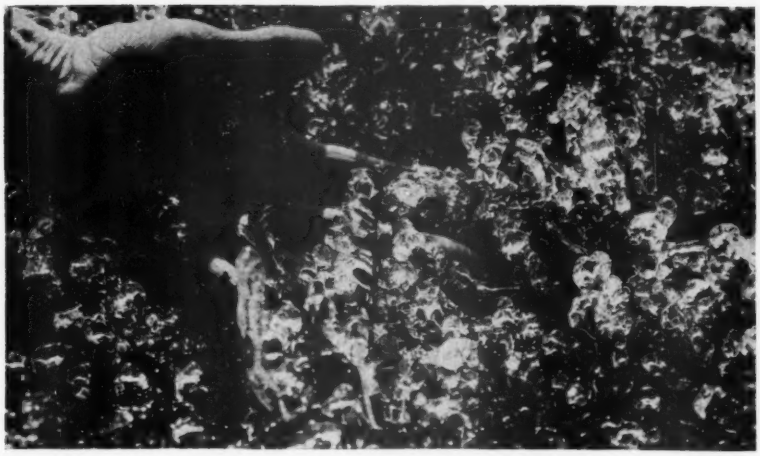
"This method has been used since the industry started here in 1810, but it requires tremendous quantities of water," says George Andruk, production manager for the United Cape Cod Cranberry Corporation which operates more than 800 acres of bogs. "Today, cranberry growers apply the water through sprinkler systems. Designed with technical help from SCS conservationists assigned to the Plymouth Conservation District, these systems cut water needs by about 90 percent."

With half of all the cranberries in the world raised in Massachusetts, this represents a big saving in water. Towns and industry will have more water available for their increasing needs.

Another advantage of sprinklers is their speedy operation. It takes time to pull flashboards or stoplogs to flood the bog, and this delay during a sudden temperature drop could mean a complete crop loss.

"We would have lost everything if we didn't have sprinklers," said Eno Laukkanen of Middleboro, after one bad night last May. "I

Carl Boutilier of SCS and bog owner Ernest Ellis (right) review plans for a sprinkler system and pump.



Ice-covered cranberries (left) are protected from frost. A reading of 35 to 40 pounds of pressure at the sprinkler head (right) indicates effective water dispersal.

checked the thermometer at midnight. It was 36°. I relaxed a little and thought we'd have a night without any trouble. At 1 o'clock I checked again and was jolted to find the temperature had dropped to 24°—12° in an hour. Immediately I started the pump. Within minutes we were protected. If we had to wait for the bogs to flood over we never would have made it."

During certain growing periods, a few hours of flooding can damage a cranberry crop as much as the frost. Cranberry flowers and tender new berries, for instance, will stand very little immersion. Sprinklers eliminate the immersion problem.

Using pumps instead of gravity flow from reservoirs means that ground-water supplies which are usually close to the surface in cranberry bog areas can be tapped by excavating dugout ponds for a reliable water source.

Besides frost control, the sprinkler water is also used for irrigation and insect and weed control. Flooding is still done to protect the vines during the winter.

SCS helps growers determine the best layout for the sprinkler heads as well as needed pipe and pump sizes. Usually the sprinkler system consists of aluminum main pipe and buried plastic laterals. Burying the laterals keeps them out of the way of production activities and protected from the weather. The pipes are laid out so the sprinkler heads are on alternate staggered spacings about 60 feet apart. Water distribution should be uniform, especially for irrigating, because the shallow-rooted vines can vary considerably in production, depending upon available moisture.

The Agricultural Conservation Program cost-shares on part of the sprinkler system. Total costs to growers run about $500 to $600 an acre installed. Crop savings for 1 year can easily equal this figure.

In the last 3 years, cranberry growers in Massachusetts have installed more than 2½ million feet of irrigation pipeline, making significant progress toward better use of the state's water resources. ♦

USDA to join many groups in Lawn and Garden Week

Under the slogan "Growing With America," USDA will join many groups in observing the first National Lawn and Garden Week, March 20–26, 1969.

All levels of government, industry, garden clubs, women's organizations, youth groups, civic organizations, community service clubs, homeowners, and occupants of houses and apartments are joining together to make more Americans conscious of the personal pride of accomplishment that comes from a well-kept lawn or garden. ♦

Florida has committee for range conservation

Far from the open ranges of the West, in space and in character, Florida grazing lands are getting the attention of a special Range Committee of the Florida Association of Soil and Water Conservation Districts.

Formed at the association's 1967 annual meeting, the committee has already been instrumental in establishing a range curriculum at the University of Florida. Courses of study have been formulated and instruction will begin in 1969.

The Range Committee has published a 10-page circular describing Florida's 10½ million acres of native grazing land and urging conservation measures.

Chairman of the committee is Lynn Harrison, a longtime Florida rancher and chairman of the board of supervisors of the Manatee Soil Conservation District.—L. L. YARLETT, *range conservationist, SCS, Gainesville, Fla.* ♦

Fire prevention: A new job for plants

By Theodore E. Adams, Jr.
Soil conservationist, SCS Plant Materials Center, Pleasanton, Calif.

The Soil Conservation Service is on the lookout for fire-resistant plants that will help reduce the perennial fire hazard on dry lands in California.

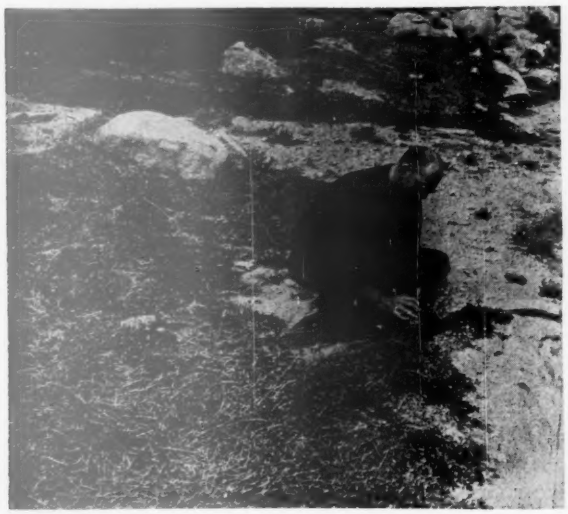
The SCS Plant Materials Center at Pleasanton, Calif., is conducting a plant evaluation program in cooperation with the U. S. Forest Service's Southwest Forest and Range Experiment Station to find plants that produce small, slow-burning growth that will carpet fuel breaks, heal fire-scarred watersheds, reduce fire hazards around urban developments, and improve wildlife habitats.

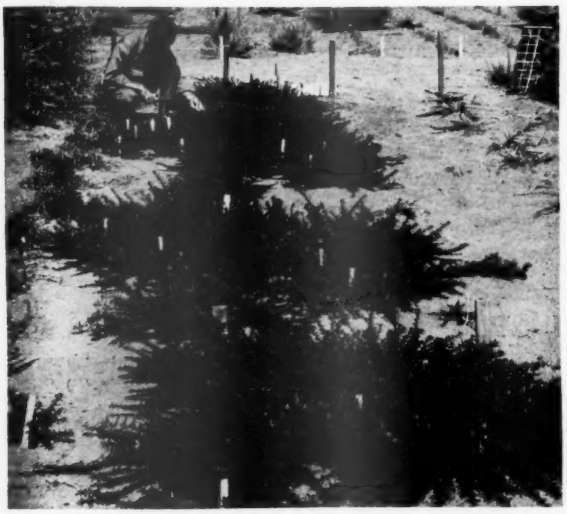
Mature native vegetation of this area is not fire resistant and each year thousands of acres in California are ravaged by fire. The price in deaths, property damage, and lost resources is high.

The search for fire-retarding plants is being extended worldwide. Promising collections from foreign sources will be planted at Pleasanton and other California locations. The largest source of test plants is the collections in SCS Plant Materials Centers. Performance and usefulness of each new collection will be determined through a systematic plant-testing program.

More than 200 plant species and strains are included in these evaluations. When plant adaptability and physical suitability are determined, selections will be tested by the Forest Service to determine their flammability and the factors that influence their burning qualities.

Dr. R. H. Ruff (left), University of Nevada, examines prostrate Ceanothus, a low-growing perennial under test for plantings on brush-cleared areas, in southern California. A Forest Service technician (right) examines test plantings of wooly nama at an experimental site established by the Forest Fire Laboratory.





Several of the collections already have been provided for flammability determinations.

Conservation uses

Although fire retardant plants are not yet available, certain conservation practices can reduce the damage from wildfires in the 20 million acres of California brushland. For example, fuel-breaks can be established in brush cover by using chemicals, heavy construction equipment, and controlled burning. These fuel-breaks provide fire fighting crews the necessary access in brushland.

Additional steps are necessary to maintain the fuel breaks. Short, low-volume plants such as grasses and legumes should be planted to control erosion and help retard reinvasion by brush. Many dryland areas in California will need phosphate or sulfur when legumes are planted. Selective chemical sprays may be required to kill brush sprouts and seedlings.

Plants for reseeding

In California, grasses and legumes are used extensively to reseed large burned-over areas. Properly selected species germinate when the first rains fall in October and November. Although the protection against erosion they provide is not as effective as desired the first season following a fire, flooding and erosion damage during subsequent seasons are greatly reduced.

Use of several grasses and legumes for replanting projects in California is encouraged. Blando bromegrass, an annual, and Lana vetch, an annual legume, are useful in northern California when mixed. Many areas of southern California have found Wimmera 62 ryegrass and Cucamonga bromegrass, both annuals, to be effective.

Plants have long been used to repair fire damage. Now technicians in the SCS and the Forest Service hope to use them to prevent this extensive damage. ◆

Grass, water, management make a paying pasture

Capper Alexander (left) and Tom Bargsten show cattle grazing in irrigated pasture.

A good seeded pasture, plus good water management, fertilizing, and pasture management, makes it possible for Capper Alexander of Fruita, Colo., to say, "Good grass is cash."

In 1965, Alexander and Soil Conservation Service people worked up a farm conservation plan that called for converting his farm from row crops to irrigated pasture.

Alexander launched a land-leveling program as the beginning step. It involved combining many small fields and reorganizing the irrigation system.

He then established a good even stand of grass by preparing a firm seedbed after the fields had been leveled. A seed mixture of about 10 lbs. per acre of brome, orchardgrass, Alta fescue, and Ladino clover was planted very shallow. He believes deep planting is one of the main reasons why many people lose their grass or have only a partial stand and think that irrigated pastures will not pay their way.

Since leveling his farm, Alexander is realizing more use from his water. One ditch serves the entire farm. He can set almost 1⅓ as many rows as before, covering one-third more area each time the water is changed. He can change the water more frequently, and irrigating now requires about ¼ the time it formerly did. He fertilizes twice a year at a rate of 110 units nitrogen per acre. Improved irrigation helps here, too—it would mean a substantial loss in dollars if the fertilizer were allowed to "wash down the drain."

"It's impossible to realize a dime from pasture unless it is fenced and managed," says Alexander. He has installed a system of cross-fences and divisions. With these, he can irrigate one division while the cows are harvesting another, and still another irrigated division is growing and waiting its turn to be grazed.—JAY COLLINS, *district conservationist, SCS, Collbran, Colo.* ◆

Urbanization in reverse

The Hawaiian Commercial and Sugar Co. is tearing out 421 acres of blacktop, concrete, runways, and taxi strips that had been used as a naval airport and will plant the land to surgarcane next spring. ◆

Go-to-grass farming puts weight on cattle and money in pocket for Dakota stockman

By Walter N. Parmeter
Conservation agronomist, SCS, Huron, S. Dak.

Stockman Cliff Reyelts, of Britton, S. Dak., foresees nothing to equal his conservation grassland program for putting weight on his cattle economically.

During the fall and winter when the range turns hard and crisp, he buys 500 head of 400–500-pound calves. He feels assured that after munching all the silage they can eat, plus a pound of protein supplement a day until the grass comes up, they will reach finishing weight during the summer on pasture alone with little trouble.

Technical help

In putting a large portion of his 1,800 acres to grass, Reyelts used SCS technical help available through the Marshall County Soil and Water Conservation District.

The Reyelts farm and ranch ranges from a sandy to a medium textured soil, mostly on gentle slopes. The home section of land produces silage and winter feed for calves, while the outlying parcels have been planted to grass. Contoured rows, terraces, grassed waterways, and tree windbreaks complete his conservation program.

After being wintered on silage and supplement, the calves are able to reach weights of 800 to 950 pounds in the next 5 months of grazing.

In early spring the calves are put on 40 acres of crested wheatgrass pasture when it is 6 to 10 inches tall and are kept there until it is grazed down to an average of 3 inches. Then, they are placed on a mixture of smooth brome and alfalfa and rotated from one pasture to another as the condition of the grass permits.

Grazing of brome and alfalfa begins between the time the brome is about 8 inches high until it is in the boot stage. All livestock are taken off when the grass is grazed down to 4 inches. A few days before this the pastures are clipped so the cattle will eat the cut foliage. The clipping prevents the bromegrass from going to seed and evens up the plants for the next grazing period. All brome pastures are rested from 3 to 4 weeks following grazing.

Some pastures are cut for hay. The forage is cut shortly after the heads come out of the boot but before seeds are formed in order to get maximum forage yield of highest protein content.

From middle July to about September 1, Reyelts places the cattle on his 33 acres of warm-season grasses of big bluestem, indiangrass, and switchgrass on Piper sudangrass. Through September and October the livestock are carried on 67 acres of Russian wildrye pasture and native range.

Legumes for protein

There are 250 acres of pasture that contain an alfalfa mixture. In the legumes Reyelts keeps bloat losses down by feeding a load of silage in the pastured area each morning. Reyelts believes the additional gain from higher protein legumes more than offsets any losses.

The cattle are watered by wells and three dugouts. Underground plastic pipe and an electric fence permit one well to provide water for seven pastures. Salt blocks are placed in the pastures to encourage more uniform grazing.

Reyelts says, "Fertilizing and killing weeds is my one-two punch to good pasture." Fertilizing the many pastures has become routine. He

Cliff Reyelts stands in a warm-season mixture of big bluestem, switchgrass, and indiangrass.

A field windbreak on the Reyelts' farm is a protective shelter for all seasons.

takes soil samples for chemical analysis and on this basis used 100 pounds per acre of 22-22-0 fertilizer on all of the pastures in 1968.

Weeds can be a problem but Reyelts sprays with 2-4-D where legumes are not planted. Annual weeds in the legume mixture are controlled by clipping.

A conservation plan

Reyelts feels that well-managed pastures are one of the best ways to build and conserve soil. Conservation has been a way of life for him for 30 years. Back in 1937 Cliff's father planted the first windbreak on the home quarter. Since then one-row field windbreaks have been established in a east-west direction every 40 rods across the home section of land. These trees reduce wind erosion, tend to hold the snow on the field for additional moisture, and make attractive wildlife areas for birds, deer, and small mammals.

Terraces are a part of Reyelts' overall conservation plan on the sloping land, and grassed waterways protect the terrace outlets. The terraces also serve as guidelines for planting crops on the contour.

The Clifford Reyelts family, his wife Gladys and their five daughters, approve of the "go-to-grass" program as it not only conserves soil, water, and wildlife but also provides more free time for the family to spend together. ♦

Citizens' council has beautification program

A citizen's council made up of representatives of civic organizations and of city, county, state, and federal agencies keeps the city of Idaho Falls and the county of Bonneville, Idaho, alert to beautification and conservation needs.

"Beautify Bonneville Council, Inc.," programs a year-round series of activities for litter removal, weed control, safety, and environmental improvement.

Their efforts have been so successful that they have just been awarded a silver bowl by Keep America Beautiful, Inc., for their outstanding antilitter campaign.

Started originally as a beautification advisory committee to the county extension agent, the group is now incorporated and organized into nine subcommittees responsible for cleanup, collection of trash, and beautification; collection and disposal of derelict autos; weed eradication; reduction of drownings in irrigation canals; establishment of parks in housing developments; beautification of roadsides and highway ditches; repairing and painting of buildings; disposal of abandoned buildings; and reclaiming swamps and dump areas for useful purposes.

The Soil Conservation Service participates by providing information on establishment and care of vegetation, soil suitabilities, and erosion and sediment control.

The council promotes a "City and County Beautification Clean Up Week," declared by proclamation of the mayor of Idaho Falls and the Bonneville County commissioners to coincide with Soil Stewardship Week. Through all news media, residents are shown community problems and eyesores and urged to back the cleanup campaign.

The committee publishes detailed information on planting and pruning trees, shrubs, and flowers for beautification. Last year a farm and ranch safety campaign was promoted concurrently.

A lawn and garden clinic was held in June, stressing safe use of insecticides and weedkillers.

City and county ordinances relating to litter, weeds, and safety have been studied and discussed in council meetings. The result has been strengthening these ordinances through changes where needed, better public understanding, and improved enforcement.

According to Mayor S. Eddie Pederson, the success of the organization lies not so much in law enforcement as in gaining public recognition and support for beautification of the area.—JOHN P. OZMUN, *district conservationist, SCS, Idaho Falls, Idaho.* ♦

Public sewage facilities on increase in U.S.

On January 1, 1962, more than 44,000 communities in the United States were without public sewage facilities. From January 1, 1962, to March 30, 1967, 1,798 communities without public sewage facilities before 1962 either received approvals or made inquiries or applications to Federal agencies. During that period 649 grants, 191 combined loans and grants, and 14 loans were approved, as reported by USDA's Economic Research Service. ♦

Singing the praises of soil surveys

Village President Bob Atcher keeps an eye on construction in Schaumburg's developing areas.

Western Singer Robert O. "Bob" Atcher, who is also President of the village of Schaumburg, Ill., is singing the praises of soil surveys.

Schaumburg lies west of O'Hare Field on the fringe of Chicago. It is one of the fastest growing urban areas in America.

Builders in the Schaumburg area had run into unstable soil conditions which cost them dearly to correct. Contractors and village officials turned to the North Cook Soil and Water Conservation District for advice and found that technical assistance was available from the Soil Conservation Service in the form of soil maps and interpretations. Within a year, village officials had copies of interpretive maps and information on soil limitations and suitabilities for urban development.

"We plan to use soil information to set up building and construction regulations that fit our area," says Atcher. "We will also use soil data to locate potential parks and playgrounds for Schaumburg."

The village entered into a cost-sharing agreement with the Soil Conservation Service to speed up field mapping of Schaumburg Township. It also helped pay the cost of labor and materials used by the North Cook Conservation District to prepare the legends and mount the maps.

Atcher says, "The areas that are severely limited for buildings show up so vividly on the map. We can now make educated decisions for growth of our community."—RICHARD DUESTERHAUS, *district conservationist, Lake Zurich, Ill.* ♦

Pond stops flooding and provides recreation

Every time a hard rain came, Delton Heath needed wading boots to get in or out of his Flowerland Nursery east of Broomfield, Colo.

A gradual drainage stoppage, widening of the highway in front of the nursery, an inadequate culvert under a driveway, and an increasing amount of paving in the 628-acre watershed all contributed to Heath's problem.

At Heath's request, SCS engineers designed a farm pond with an adequate spillway to divert floodwaters away from the buildings. He also pumps water from the pond to irrigate young nursery stock, and his children have found it useful for swimming and boating.—Ross L. CAMPBELL, *district conservationist, SCS, Boulder, Colo.* ♦

Departments join to upgrade rural housing

The Department of Agriculture will administer in rural areas new programs to upgrade housing provided by the Housing and Urban Development Act of 1968, under an agreement recently signed by Secretary of Agriculture Orville L. Freeman and Secretary of Housing and Urban Development Robert C. Weaver.

The agreement, authorized by Congress, is an extension of the "outreach" function of USDA that puts rural people in touch with services provided by other Government agencies.

Secretary Freeman designated the Farmers Home Administration to act as agent for HUD's Federal Housing Administration in making available to rural residents that agency's interest supplement loans authorized by the new law.

Interest supplement loans are designed for families in the lower income group to assist them in obtaining adequate housing. They will be funded by local private lenders at Federal Housing Administration interest rates. Loans will be available for purchase of existing houses, either new or renovated, or for construction of individual homes. ♦

Trout farming

Trout are a favorite food fish everywhere in the Nation. The rainbow trout is the most popular for fish farming. Cold water, and plenty of it, is required for trout production. Springs or coldwater streams must flow a minimum of 300 gallons a minute for successful trout cultivation. Well water and much spring water must be oxygenated. ♦

Meetings . . .

Cooperatives offer new agriculture directions

New faces in Washington and possible new directions for agriculture will be in the spotlight January 14-15 at the 40th annual meeting of the National Council of Farmer Cooperatives.

Newscaster Eric Sevareid will address delegates at a noon luncheon on "A Look at the New Administration." Oregon Senator Mark Hatfield will speak on "Politics Should Be the Concern of Everyone."

A panel discussion by four members of the House of Representatives will explore "Future Trends in Agricultural Legislation."

About 600 farmer cooperative officials from throughout the Nation will attend the meeting, to be held at the Washington Hilton Hotel.

Dates and places

January 14–15, National Council of Farmer Cooperatives, Washington, D. C.

19–23, American National Cattlemen's Association, Honolulu, Hawaii.

26–29, National Woolgrowers Association, San Francisco, Calif.

February

2–6, National Association of Soil and Water Conservation Districts, Atlanta, Ga.

11–14, American Society of Range Management, Calgary, Canada.

14–18, American Road Builders Association, Chicago, Ill.

15–19, American Association of School Administrators, Atlantic City, N. J.

16–19, American Pulpwood Association, New York, N. Y.

24-25, Sprinkler Irrigation Association, Annual Technical Conference, Washington, D. C.

24–26, Land Improvement Contractors of America, Grand Rapids, Mich.

28–March 2, National Wildlife Federation, Washington, D. C.

Population pressure on natural resources

The population in the United States in the last 100 years has grown five times over. This leaves less and less room for people and animals, houses and farms, cities and factories, trees and plants, clean water and fish, and pure air. ♦

Review

River Control and Drainage in New Zealand. By A. R. Acheson. *1968. Ministry of Works, New Zealand, Wellington, N. Z. 296 pp., illus., maps. $9.00.*

This book provides both technical and historical information concerning the problems of river control and drainage in New Zealand. It briefly describes the physical features, hydrometeorology, and history and organization of river control and drainage in that country.

The watershed protection schemes there are patterned on, but not identical with, those developed in the United States by the Soil Conservation Service.

River control is effected by bank stabilization and detention structures. The book gives an excellent discussion of river bank stabilization, complete with illustrations and schematic drawings. Drainage is quite comparable to that practiced in the U. S.—Eugene C. Buie, *director, River Basins Division, SCS.*

Wastes in Relation to Agriculture and Forestry. By Cecil H. Wadleigh. *1968. USDA Misc. Publ. 1065. 112 pp. $0.60.*

Wastes in Relation to Agriculture and Forestry, as an early paragraph states, "provides terse consideration to 10 major categories of entities that contaminate the air, water and soil of our environment. . . ."

These categories are sediments, chemical air pollutants, airborne dusts, plant nutrients, inorganic salts and minerals, organic wastes, infectious agents and allergens, agricultural and industrial chemicals, radioactive substances, and heat.

The conservationist will find the discussion of sediment and airborne dusts of special interest, particularly as to the accounts of research progress. Background on the development and course of pollution problems is of further interest.

In Appendix IV's "Problems in Waste Management Needing Attention in Agriculture and Forestry," Author Wadleigh points out, "As America's technological giant continues to grow, it becomes ever more ravenous for better information. In doing so, this giant also casts a powerful spotlight over broad areas of ignorance—untilled fields that should be producing food for the giant. . . . The need for sound information relative to production, management, use, and control of wastes is so vast that no one responsible for direction of research in this area will ever emulate the U. S. Commissioner of Patents in the early 19th century who resigned from his post on concluding that everything that could possibly be invented, had been invented."

USDA Miscellaneous Publication 1065 is a landmark publication on the subject and should be a valuable reference in many a library.—T. A. Jenkins, *Information Division, SCS, Washington, D. C.*

Soil-Plant Relationships. By C. A. Black. *1968. 2d. ed. John Wiley & Sons, New York. 792 pp., illus. $19.95.*

This revision of a book first published in 1957 brings up to date a comprehensive and exhaustive review of the state of knowledge of nine important aspects of soil-plant relationships.

Each chapter considers current theories regarding the effects of certain soil properties on plant growth with impartial detachment. Most, it seems, are open to question, and one might conclude from skimming the book that little knowledge in soil science is conclusive at this stage. The lengthy lists of citations at the end of each chapter indicate the thoroughness of the review, and careful documentation in the text enables the reader to trace each point to its source.

The topics treated are soil characterization (i.e., texture, structure, mineralogy, and profile), water, aeration, exchangeable bases, soil acidity, salinity and excess sodium, nitrogen, phosphorus, and potassium.

The author admits in his preface that there are other aspects of soil-plant relationships of significance but explains that they were omitted because of lack of time to prepare them for inclusion. This is easily understood in view of the attention devoted to the ones treated.—B. O.

New publications

Key to the Native Perennial Grasses—Midwest Region East of the Great Plains. *1968. USDA, SCS-TP-151. 116 pp., illus. $1.* This guide was abstracted from Hitchcock's *Manual of the Grasses of the United States* (USDA Misc. Publ. 200) by plant scientists of the Soil Conservation Service's Midwest Regional Technical Center, Lincoln, Nebr. It includes species that occur east of the Great Plains in the area of responsibility of the technical center; i.e., the states of Michigan, Wisconsin, Indiana, Illinois, Minnesota, Iowa, Missouri, and eastern North Dakota, South Dakota, Nebraska, and Kansas. The selection should be equally applicable to most of the rest of the Northeastern United States.

The combination of the taxonomic keys and the illustrations from Hitchcock's manual, plus a few additional illustrations from the 1948 Yearbook of Agriculture and an annotated list of species giving information about environment, growth habit, and distribution, make a very convenient field handbook of grasses for the region. English names are generally from the second edition of *Standardized Plant Names.*

Within the region to which it applies, the guide will serve most users as an adequate substitute for the complete manual from which it is derived.

The Cost of Clean Water. *1968. U. S. Dept. Int., Federal Water Pollution Control Administration. 227 pp. $2.50.*

This report of a study on economic impact of costs of installation of treatment facilities required by the Federal Water Pollution Control Act presents and evaluates data on the requirements of state and local governments to meet those water-quality standards. It also appraises the financial and legal problems that will be encountered. The first section covers required capital outlays; the second, the ability of local governments to finance these outlays; and the third treats the legal constraints in financing. There are four technical appendixes.

To meet the needs of the growing population requires an expenditure of $15 billion within the next 5 years, about a quarter of which can be financed from Federal grants. Small communities account for a disproportionate share of requirements and their units are generally more costly.

Grazing Intensities and Systems on Crested Wheatgrass in Central Utah: Response of Vegetation and Cattle. By Neil C. Frischknecht and Lorin E. Harris. *1968. USDA Tech. Bull, 1388. 47 pp., illus.* Crested wheatgrass can fill an important need for early spring grazing in the intermountain region. Under conditions at Benmore, Utah, crested wheatgrass may be grazed from April 20 to June 20 at an intensity of about 65 percent of herbage by weight. This intensity gives optimum cattle gains per acre and maintains grass production. Delaying the start of grazing in the spring contributes toward maximum basal area and yields of grass, and shortening the grazing season at the end of the spring growing season encourages maximum plant numbers.

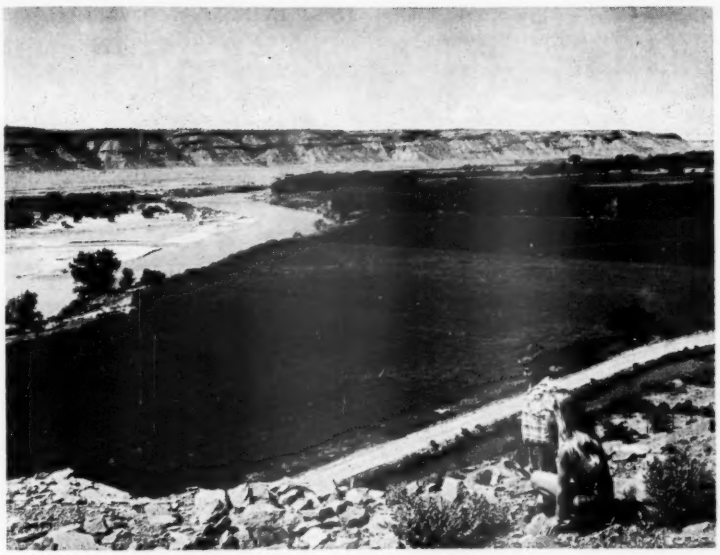
Use of Water by Riparian Vegetation, Cottonwood Wash, Arizona. By James E. Bowie and William Kam. *1968. U. S. Dept. of Int. Geol. Surv. Water-Supply Paper 1858. 62 pp., illus., with map in pocket.* Includes a section on vegetation by F. A. Branson and R. S. Aro. A 4.1-mile length of the stream channel was selected and divided into a 2.6-mile upper reach and a 1.5-mile lower reach, and the change in water use as a result of the modification of riparian vegetation was measured. The computed average loss of water from the lower reach before modification was 80 acre-feet per growing season, a quantity which represented about 18 percent of the average flow entering the reach in the same period. The average loss after modification of the vegetation was 42 acre-feet per growing season, equivalent to about 12 percent of the average flow in the same period.

Soil surveys

Woodruff County, Arkansas. *1968. 60 pp., illus.; maps 3.17 inches to the mile (1:20,000).* Soils surveyed by George H. Maxwell, James V. Clark, George R. Dahlke, and James E. Hoelscher.

Morgan County, Colorado. By Clayton F. Spears, Alan E. Amen, Louis A. Fletcher, and Lynn R. Healey. *1968. 102 pp., illus.; maps 4 inches to the mile (1:15,840).*

AMERICA THE BEAUTIFUL COLOR LITHOGRAPHS



America The Beautiful—New Mexico USDA SOIL CONSERVATION SERVICE
IRRIGATED RIVER BOTTOMLAND, SAN JUAN SOIL AND WATER CONSERVATION DISTRICT

Full-color lithograph prints suitable for framing—one for each state, Puerto Rico, and Virgin Islands—are available from the Superintendent of Documents for $0.10 each or $5 for set of 52. Obtain order blanks from our local SCS or post office.

From the Administrator:

Conservation Concepts for the Future

In this, my last editorial for *Soil Conservation,* I should like to express some conservation concepts that I believe have relevance for the next decade or more. These concepts are based on the lessons of the 33 years' experience of the Soil Conservation Service in which I have shared and on the projected needs of our people in America.

(1) *Soil and water conservation is for, and is the responsibility of, all people.* This responsibility involves not only stewardship but also use and development to meet both short-term and long-term needs of individuals and of society.

Soil conservation is not peculiarly a farm program. True, farm and ranch owners and operators have a major responsibility to their community, state, and Nation to conserve the soil and water resources they use. Nonagricultural users of soil and water are equally responsible for managing their resources in the public interest also.

(2) *Government at all levels, speaking and acting for the people, must exert aggressive and effective leadership in soil and water conservation.* It must support this high-priority goal with financial resources fashioned to the need.

For 30 years soil and water conservation districts have provided a local governmental vehicle to lead and motivate conservation actions. Generally, they have done a marvelous job. But in most states, these districts need added authority and added resources to meet the task ahead.

Many county and state governments are using tax resources to help with the task, but few have yet to participate to the extent that the people's interest in protecting the basic tax resource requires. Broader and deeper involvement is essential. Likewise, the Federal Government must more nearly gear its inputs to the needs of the times.

(3) *Conservation technology must be kept vigorous and up to date.* Professionally, the technical foundation for soil and water management has been carefully and soundly laid. The interrelated technologies with which to build the programs of tomorrow must be kept up to date with new research and experience. Fortunately, the same basic principles of soil, water, and plant management and the art of working with people are applicable to nonagricultural as well as agricultural uses of land. It has not been necessary to create new professions to do conservation, but it is continually necessary to build upon those we already have. The Soil Conservation Service must maintain professional as well as administrative integrity.

(4) *The emphasis in Soil Conservation Service program activities must be responsive to changing public needs.* The need for and fundamental soundness of the several programs for which SCS has responsibility have been publicly acknowledged and widely supported. The emphasis in application of these programs, however, has been under continuous change. From an initial concern with erosion control and moisture conservation almost exclusively on farm and ranch land, SCS now deals with community, multicounty, and regional conservation problems. This trend toward service to a broadened clientele will continue. For example, more attention must be given to sediment and other pollution reduction. Open-space and outdoor-living opportunities will need recognition and implementation.

The Soil Conservation Service in the future will need to be more selective in providing planning assistance to individual landowners and groups in order to be sure that planning is related to actual needs and to the readiness of responsible citizens for action. There will be need for more professional competence to work with community and broad area decision makers. Assistance to individuals in applying planned practices will come less from the Soil Conservation Service and more from non-Federal sources. Some organizational and staffing adjustments will be needed to meet changing program requirements.

(5) *Opportunities for people to live a satisfactory life will be found more and more in rural America.* Here the basic soil and water resources are the necessary foundation for a growing economy. Environmental factors of good soil, clean water, clean air, living space in an uncluttered landscape, and employment opportunities in both agricultural and nonagricultural endeavors will greatly influence the health and social behavior of our people. The wise use and conservation of soil and the conservation and development of water resources to meet the needs of a rural-urban society must have high priority in the years and decades ahead.

All in all, Soil Conservation Service people will be dealing with exciting and challenging opportunities in the years ahead. It would be mighty interesting for me to share these opportunities with you. But, my task has been to help lay the foundation; yours is to continue to build on it. Best wishes as you meet the needs of the years ahead.

D. A. WILLIAMS

UNITED STATES
GOVERNMENT PRINTING OFFICE
DIVISION OF PUBLIC DOCUMENTS
WASHINGTON, D. C. 20401

OFFICIAL BUSINESS

POSTAGE AND FEES PAID
U. S. GOVERNMENT PRINTING OFFICE

If your address changes, please notify us of your complete new address, including Zip Code number, and include old address with our code number as shown above.

A neglected park becomes a recreation center under guidance of Jaycees and TAP panel

The western Kansas community of Hoxie, population 1,337, had a wooded "park" on the edge of town that was more misused than used and had more weeds and brush than grass.

Now, thanks to the leadership of Hoxie Jaycees, families are enjoying picnics in Buffalo Bill Park, and Girl Scouts are using the park for day camp and training sessions.

In 1967, the Jaycees sought planning and financial assistance through the Sheridan County Technical Action Panel. They were referred to the Soil Conservation Service for planning assistance and to the Kansas State Park Authority for financial aid.

A long-range plan was developed by the Jaycee executive committee in cooperation with the Sheridan County Soil Conservation District.

Projects included: building and improving roads, placing posts and cables, removing certain trees and overhanging limbs, building five 12-by-12-foot shelter houses, installing charcoal pits, placing picnic tables and water fountains, and putting in swing sets, horseshoe pits, and a merry-go-round.

The Jaycees intend to carry out the projects by stages over a period of years, as finances permit. In 1967, they had a general cleanup, sprayed weeds, trimmed trees, and cut grass and weeds. As a Scout community improvement project, local Boy Scouts and Explorer Scouts helped with the cleanup.

In 1968, the Jaycees built roads in and around the park. The county donated sand for the roads and parking areas, as well as the use of bulldozers, graders, and other heavy equipment. About 1,800 feet of posts and cable were erected, too.

During the year, the Jaycees conducted several fund-raising projects to further the development of the park.—W. D. YOUNKIN, *district conservationist, Hoxie, Kans.* ♦

Buffalo Bill Park is now a shady oasis in the Kansas landscape frequented by picnickers.